UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8, MONTANA OFFICE
FEDERAL BUILDING, 10 West 15th St, Suite 3200
HELENA, MONTANA 59626

Ref: 8MO

October 3, 2012

Wild Cramer Project
Swan Lake Ranger District
200 Ranger Station Road
Bigfork, Montana 59911

Re: CEQ 20120275; EPA Comments on Wild Cramer Forest Health and Fuels Reduction Project Draft EIS

Dear Wild Cramer Project Manager:

The Environmental Protection Agency (EPA) Region VIII Montana Office has reviewed the Draft Environmental Impact Statement (DEIS) for the Flathead National Forest's Wild Cramer Forest Health and Fuels Reduction Project in accordance with EPA's responsibilities under Section 102(2)(C) of the National Environmental Policy Act (NEPA), 42 U.S.C. Section 4321 *et.seq.*, and Section 309 of the Clean Air Act, 42 U.S.C., Section 7609. Section 309 of the Clean Air Act directs EPA to review and comment in writing on the environmental impacts of any major Federal agency action. EPA's comments include a rating of both the environmental impact of the proposed action and the adequacy of the NEPA document.

The EPA recognizes the need to address the forest health, fuels and fire risk, and timber supply issues within the Island Unit of the Flathead National Forest. We do have some concerns, however, regarding the already high road density in the project area, and the proposal to construct additional roads in the area that would further increase road density (i.e., there are 379.3 miles of road, 210.1 miles managed by the Forest Service, and 332 road stream crossings, with a road density of 4.8 miles of road per square mile in the analysis area, and even a slightly higher road density on Forest Service lands).

The proposed action (Alternative 2) involves the construction of an additional 27.5 miles of road in the project area (i.e., 13.1 miles of new permanent roads and 14.4 miles of new temporary roads). The other action alternatives also include new road construction, although in lesser amounts (i.e., Alternative 3 proposes 13.4 miles of new road (7.9 miles of new permanent roads and 5.5 miles of new temporary roads); Alternative 4 proposes 19.3 miles of new road (9.6 miles of new permanent roads and 9.7 miles of new temporary roads); and Alternative 5 proposes 17.1 miles of new road (4.8 miles of new permanent road, although all on historic road templates, and 12.3 miles of new temporary roads).

We generally encourage efforts to minimize new roads, especially in areas that are already heavily roaded, since roads are often the major anthropogenic sediment source adversely affecting hydrology, water quality, and fisheries of streams in National Forests. Roads and motorized uses also often adversely affect wildlife habitat, connectivity and security, can adversely impact air quality, and promote spread of weeds and cause other adverse ecological effects. Although we also recognize the need to conduct forest management activities to restore vegetative conditions, improve forest resilience to fire, insects and disease, reduce fire risks, and promote more natural and sustainable forest structure, and we recognize the need for road access for conduct of vegetation management activities.

Alternatives 3 and 5 both propose lesser amounts of new road construction, and thus, reduced adverse environmental impacts from roads over Alternatives 2 and 4 while addressing project purpose and need. Accordingly we favor Alternatives 3 and 5 over the other action alternatives. We also support the proposal in Alternative 5 to drop portions of the proposed treatments in riparian habitat conservation areas (within units 41/42/44, 29, and 79), and support the higher levels of prescribed fire, sapling thinning and non-commercial thinning with Alternative 5 to better reduce fuel loadings and wildfire risks. In addition we support the Alternative 5 elimination of 8 harvest units in the watershed of the West-South Fork of Stoner Creek, which is stated to have poor channel stability, to reduce water yield increases, and thus, reduce the threat of exacerbating the existing channel instability in the West-South Fork of Stoner Creek.

We note that we did not see any road decommissioning included in the proposed project, although the DEIS indicates that the Forest Service began closing roads for wildlife habitat improvement in the mid-1980's, and 54.5 miles of roads have been bermed in the project area since that time. We ask if there may be any opportunities to decommission additional roads in the project area in association with the Wild Cramer Project to reduce the existing high road densities, and thus, help mitigate effects of proposed additional roads?

Land management decisions involve environmental and resource management trade-offs (i.e., trade-offs in impacts among vegetation treatments, restoration of vegetative conditions, fire risk and fuels, forest health, wildlife, water quality and fisheries, air quality, weed spread, old growth, and other resource impacts). We generally consider it appropriate to evaluate the many environmental and resource management trade-offs while addressing project purpose and need and significant issues in an effort to balance and optimize the overall trade-offs and minimize adverse environmental impacts.

We recommend that the Flathead National Forest consider selection of a preferred alternative through modifications in the current action alternatives in an effort to optimize the environmental and resource management trade-offs, while addressing project purpose and need and minimizing environmental impacts. Additional alternatives modification and evaluation in the FEIS may also better explain to the public the trade-offs involved in making land management decisions, and may lead to improved public acceptance of decisions. We have identified desirable features we consider worthy of including in a modified preferred alternative in our more detailed comments (enclosed). We note of course that the Forest Service would need to evaluate and analyze the impacts of any new modified alternative that is developed, and display those impacts in the FEIS.

We also note that the DEIS states that pyrolysis may be used to process forest biomass to extract energy content to create bio-oil or other energy products. Biochar can be produced by pyrolysis of logging slash which can then be applied as a soil amendment to improve soil productivity. In addition we note that pyrolysis may reduce air pollutant emissions through pyrolysis of logging slash rather than burning the slash, and this could be an important project benefit since the Wild Cramer project area is located near the particulate (PM_{10}) air quality non-attainment areas of Kalispell, Whitefish and Columbia Falls and the Flathead Indian Reservation, Bob Marshall Wilderness and Glacier National Park Class I air quality areas. In addition biochar can retain carbon for long periods, giving pyrolysis a potential benefit in reducing greenhouse gas emissions as well.

The DEIS states that pyrolysis is an emerging technology that the Forest Service is studying in some areas of the country, and in the event biomass conversion is economically feasible, logging slash would be chipped at the landing sites and converted to bio-derived fuels. It appears, therefore, that the Flathead NF is still evaluating the potential use of pyrolysis of logging slash for this project. We very much encourage the Flathead NF to consider pyrolysis of logging slash as an alternative to burning slash during the Wild Cramer Project due to its many benefits.

The EPA's further discussion and more detailed questions, comments, and concerns regarding the analysis, documentation, or potential environmental impacts of the Wild Cramer Forest Health and Fuels Reduction Project DEIS are included in the enclosure with this letter. Based on the procedures EPA uses to evaluate the adequacy of the information and the potential environmental impacts of the proposed action and alternatives in an EIS, the DEIS has been rated as Category EC-2 (Environmental Concerns-Insufficient Information) due to potential for some adverse effects to water and air quality from proposed management activities, particularly if Alternative 2 were selected. We recommend additional analysis and information to fully assess and mitigate all potential impacts of the management actions. A copy of EPA's DEIS rating criteria is attached.

The EPA appreciates the opportunity to review and comment on the DEIS. If we may provide further explanation of our comments please contact Mr. Steve Potts of my staff in Missoula at 406-329-3313 or in Helena at 406-457-5022 or via e-mail at potts.stephen@epa.gov. Thank you for your consideration.

Sincerely,

Julie A. DalSoglio

Julie A. DalSoglio
Director
Montana Office

Enclosures

cc: Suzanne Bohan/Judy Roos, EPA 8EPR-N, Denver
Dean Yashan/Robert Ray, MDEQ, Helena

EPA COMMENTS ON THE WILD CRAMER FOREST HEALTH AND FUELS REDUCTION PROJECT DEIS

Brief Project Overview:

The Swan Lake Ranger District of the Flathead National Forest (FNF) prepared this DEIS to evaluate proposals for hazardous fuels reduction activities, including harvesting and thinning of trees and prescribed burning within the Island Unit of the FNF. This is an area of National Forest System (NFS) lands entirely surrounded by private and State lands, lying approximately 10 miles south of Kalispell and 2 miles west of Flathead Lake. The project area consists of 30,727 acres (26,662 acres of NFS lands) containing the drainages of Wild Bill, Truman, Emmons, Patrick, Cramer, Bierney, and Stoner Creeks. The project area includes the Blacktail Mountain Ski Area, an FAA electronic site, several communication sites located on Blacktail Mountain, and a Bonneville Power Administration high voltage transmission line. Several communities lie on near the project area: Kila to the north, Marion to the northwest, Somers and Lakeside to the east, and Rollins, Proctor, and Dayton to the southeast.

The primary purposes of the proposed project are: 1) Improving and/or maintaining the general health, resiliency, and sustainability of forest stands and reduce the risk of insect epidemics and severe disease infestations within the project area; 2) Reducing forest fuels build-up adjacent to public and private lands, increasing public and firefighter safety in the event of a wildfire, and increasing the probability of stopping wildfires on NFS lands before they burn onto private lands; and 3) Providing wood products for local communities and to the local timber industry, contributing to short-term timber supply and providing for long-term sustainability of timber on NFS lands. A secondary purpose is to benefit public recreation by addressing forest health issues within the Blacktail Mountain Ski Area. A no action alternative (Alternative 1) and four action alternatives (Alternatives 2 through 5) were evaluated. A preferred alternative was not identified in the DEIS.

Alternative 2 is the proposed action and includes approximately 3,538 acres of tree harvest (clearcut, seedtree, shelterwood, all with reserves), 1,188 acres of commercial thin harvest, 128 acres of noncommercial thin, 152 acres of sanitation harvest, a 22-acre special cut in the ski area, 3,890 acres of sapling thinning, and 228 acres of prescribed burning (in five areas). Approximately 2,152 acres would be harvested using ground-based equipment; 1,060 acres harvested via skyline cable; and 1806 acres harvested using a combination of ground-based and skyline methods. A significant amount of road construction may be involved to access timber with the proposed project (i.e., an estimated 13.1 miles of permanent road [5.4 miles on historic road templates, 6 stream crossings] and 14.4 miles of temporary road [5.7 miles on historic road templates, 3 stream crossings]); and an additional 166 miles of existing National Forest System roads would receive either road reconstruction or pre-haul maintenance.

Alternative 3 was developed to address the issues of wildlife security and big game winter range thermal/snow intercept cover, and includes 2,055 acres of tree harvest, 370 acres of commercial thin harvest, 52 acres of noncommercial thin, 152 acres of sanitation harvest, a 22-acre special cut in the ski area, 3,687 acres of sapling thinning, and 200 acres of prescribed burning. Changes to the proposed

action (alternative 2) include dropping or modifying treatments where applicable 1) to maintain wildlife security values within the security areas; 2) to maintain wildlife security values along closed roads that are revegetated and largely impassable to motorized vehicles; 3) to provide for animal crossing by maintaining more cover in saddles and on ridges adjacent to open roads; and 4) within the winter range areas to maintain winter range values. Alternative 3 includes construction of 5.5 miles of new temporary roads (2.1 miles on historic road templates, 2 stream crossings) and 7.9 miles of specified new roads (3.3 miles on historic road templates, 2 stream crossings and 1 drive-through dip). Approximately 113 miles of NFS roads would have some level of reconstruction or pre-haul maintenance.

Alternative 4 was developed to address the issue of fragmentation and connectivity of old forest habitat, and includes 2,338 acres of tree harvest, 474 acres of commercial thin harvest, 83 acres of noncommercial thin, 129 acres of sanitation harvest, a 22-acre special cut in the ski area, 3,824 acres of sapling thinning, and 170 acres of prescribed burning. Changes to the proposed action (alternative 2) include dropping or modifying treatments where doing so would provide larger patches of interior forest habitat and improved habitat connectivity for associated wildlife species. Alternative 4 includes 9.7 miles of new temporary roads (4.1 miles on historic road templates, 1 stream crossing) and 9.6 miles of specified new roads (4.6 miles on historic road templates, 4 stream crossings and 1 drive-through dip). Approximately 142 miles of NFS roads would have some level of reconstruction or pre-haul maintenance.

Alternative 5 was developed to address the issue of water quality and quantity, and includes 2,711 acres of tree harvest, 1,106 acres of commercial thin harvest, 128 acres of noncommercial thin, 152 acres of sanitation harvest, a 22-acre special cut in the ski area, 3,890 acres of sapling thinning, and 228 acres of prescribed burning. Changes to the proposed action include dropping treatments in watersheds where effects to water quality or water yield is of concern. This would include dropping portions of the proposed treatments in riparian habitat conservation areas (within units 41/42/44, 29, and 79) and reducing new permanent road construction to 4.8 miles (on historic road templates only, 2 stream crossings). Alternative 5 includes 12.3 miles of new temporary roads (5.2 miles on historic road templates, 2 stream crossings). Approximately 156 miles of NFS roads would have some level of reconstruction or pre-haul maintenance

Comments:

1. We appreciate the inclusion of clear narrative descriptions of alternatives, maps of the action alternatives, tables describing features of alternatives, project design criteria (Table 2-17) and comparison of alternatives (Tables 2-18, 2-19, and 2-20), discussion of significant issues and monitoring in Chapter 2 of the DEIS, and the Appendices regarding road management and BMPs. The DEIS narrative, alternatives tables, maps, and appendices facilitate improved project understanding, help define issues, and assist in evaluation of alternatives providing a clearer basis of choice among options for the decisionmaker and the public in accordance with the goals of NEPA. Although we recommend that the Table of Comparison of Alternatives (Table 2-18) include disclosure of the total amount of tree harvest for each alternative (i.e., summing up regeneration harvest, commercial thin, non-commercial thin, special cut, and sanitation harvest for each alternative). Such summary information with alternatives descriptions in Chapter 2 would further facilitate alternatives evaluation and public understanding.

Alternatives

2. As discussed in our transmittal letter, Alternatives 3 and 5 both appear to provide reduced adverse environmental impacts from roads over Alternatives 2 and 4. In addition we support the proposal in Alternative 5 to drop portions of the proposed treatments in riparian habitat conservation areas (within units 41/42/44, 29, and 79), and support the higher levels of prescribed fire, sapling thinning and non-commercial thinning with Alternative 5 to better reduce fuel loadings and fire risks. We also support the elimination of 8 harvest units in the watershed of the unstable channel of West-South Fork of Stoner Creek in Alternative 5 that would reduce the water yield increase, and thus, reduce the threat of exacerbating the existing channel instability in the West-South Fork of Stoner Creek.

   We recognize that land management decisions involve environmental and resource management trade-offs (i.e., trade-offs in impacts among vegetation treatments, restoration of vegetative conditions, fire risk and fuels, forest health, wildlife, water quality and fisheries, air quality, weed spread, old growth, and other resource impacts). We generally consider it appropriate to evaluate the many environmental and resource management trade-offs while addressing project purpose and need and significant issues in an effort to balance and optimize the overall trade-offs and minimize adverse environmental impacts. The Flathead NF, therefore, may want to consider modifications in the current action alternatives as it identifies a preferred alternative in an effort to optimize the environmental and resource management trade-offs. Desirable features we consider worthy of including in a modified preferred alternative are as follows:

   ► minimize new road construction and reconstruction, especially long-term or permanent new roads, and locate necessary new roads on uplands away from streams where they have minimal aquatic impacts, and avoid road construction on erosive soils and geologically unstable areas;

   ► maximize improvements to road BMPs, road drainage, and sediment/erosion control, address road failures, replace undersized culverts and culverts that block fish passage (except where such blockage is desired to protect native fish populations);

   ► maximizing decommissioning of roads and removal of road stream crossings to reduce existing road densities, while allowing for necessary management and reasonable public access, since improved watershed conditions, fisheries, and wildlife habitat and security are associated with reduced road densities;

   ► plan, design and implement vegetative treatments to minimize erosion and sediment transport and excessive water yield, and protect riparian areas and other sensitive wildlife habitat, while optimizing fuel and fire risk reduction, particularly in wildland urban interface areas, and improving wildlife habitat, connectivity and security, retaining large healthy trees of desirable species and/or species in decline (Ponderosa pine, western larch, aspen), and promoting more natural and sustainable forest structure, and protecting other resource values (e.g., soil productivity, old growth, control of noxious weeds);

▶ provide a Forest road system that allows adequate access for management, avoids high road densities and erosion & transport of sediment to streams and degradation of habitat in wetlands and other environmentally sensitive areas, protects wildlife habitat and security, avoids spread of noxious weeds, and provides opportunities for public recreation while adequately balancing motorized and non-motorized recreation opportunities.

3. We appreciate the disclosure of information regarding harvest methods for Alternative 2 that indicate approximately 2,152 acres would be harvested using ground-based equipment; 1,060 acres harvested via skyline cable; and 1806 acres harvested using a combination of ground-based and skyline methods (page 28, Vol. 1). The amount of ground-based harvest in the action alternatives is of interest since ground based harvests have greater potential for soil disturbance and sediment production and transport. We did not see similar clear disclosures of the amount of ground based timber harvest for Alternatives 3, 4, and 5 in Chapter 2. It would be helpful if the amount of ground based timber harvest were summarized for Alternatives 3, 4, and 5 in Chapter 2 as it was for Alternative 2 (i.e., to avoid the reader having to add up ground based harvests from each unit).

4. On page 30 (Volume 1) it states that approximately 166 miles of existing National Forest System (NFS) roads would have some level of reconstruction or pre-haul maintenance, yet on page 5 (Volume 1) in the discussion of the proposed action it states that road maintenance would occur on over 100 miles of road in the area. We suggest that this discrepancy be corrected in the FEIS (i.e., between 166 miles and over 100 miles of road maintenance).

5. It is stated that Alternative 3 has 2,377 acres less tree harvesting than does alternative 2 (page 47, Vol. 2). Initially we were confused by this amount, since Alternative 2 is stated in Chapter 2 to have 3,538 acres of regeneration harvest and Alternative 3 is stated to have 2,055 acres of regeneration harvest (a difference of 1,483 acres), but then recognized that the reported differences in tree harvesting between Alternatives 2 and 3 includes differences in acreage of commercial thinning as well as regeneration harvests. It would be helpful to public understanding and avoid confusion to explain this more clearly in the FEIS.

Water Quality, Fisheries, Soils

6. The EPA is interested in seeing that federal land management projects are consistent with State and EPA efforts to address water quality impairments, promote riparian/stream functioning, and avoid/minimize adverse impacts to threatened and endangered fish species. We appreciate the DEIS disclosures indicating that there are no streams in the Wild Cramer project area currently listed on the Montana Department of Environmental Quality (MDEQ) - 303(d) Impaired Waterbody List (page 16, Vol. 2), and that all of the riparian areas/streams within the FNF boundary appear to be in proper functioning condition (page 22, Vol. 2). We also appreciate the disclosure that there are no bull trout or bull trout critical habitat within the analysis area nor were they ever historically present based upon FWP survey records, page 89, Vol. 2). Such disclosures greatly assist our review. We note that westslope cutthroat, rainbow and brook trout appear to be the predominant trout species in streams in the project area (pages 90-92, Vol. 2).

7. Table 3-89 (pages 17, 18, Vol. 2) shows 379.3 miles of road in the analysis watersheds (on all land ownerships) with a total area in all watersheds of 50,325 acres. This computes to an average road density of 4.8 miles of road per square mile in the analysis area, which is very high road density. The DEIS also states that there are 332 road stream crossings in the area, 210.1 miles of the roads in the project area are managed by the Forest Service (page 14, Vol. 2). The road density and road stream crossing density for NFS roads in the project area did not appear to be identified, although if you applied the 210.1 miles of NFS road to the 26,662 acres of NFS lands in the project area (page 2, Vol. 1) you would estimate that the road density on NFS lands was over 5 miles of road per square mile.

   Due to the existing high road density in the project area we have concerns about the proposed construction of additional roads that will further increase road density. The proposed action would add 13.1 miles of new permanent roads and 14.4 miles of new temporary roads to the landscape, although the other action alternatives propose lesser amounts of road construction. Sediment from roads, particularly during road construction, and from poorly maintained roads with inadequate road drainage and many stream crossings often results in adverse water quality impacts. Roads and motorized uses also often adversely affect wildlife habitat, connectivity and security, can adversely impact air quality, and promote spread of weeds and cause other adverse ecological effects.

   It is not clear to us if all practicable efforts been made to minimize construction of new roads, although we recognize that Alternatives 3, 4, and 5 include less new roads than the proposed action. Alternative 3 includes the least amount of new roads (i.e., 7.9 miles of new permanent roads [3.3 miles on historic road templates, 2 stream crossings and 1 drive-through dip], and 5.5 miles of new temporary roads [2.1 miles on historic road templates, 2 stream crossings], with approximately 113 miles of road reconstruction or pre-haul maintenance). Alternative 4 includes 9.6 miles of new permanent roads (4.6 miles on historic road templates, 4 stream crossings and 1 drive-through dip) and 9.7 miles of new temporary roads (4.1 miles on historic road templates, 1 stream crossing), with approximately 142 miles of road reconstruction or pre-haul maintenance. Alternative 5 has the least amount of permanent new roads (i.e., 4.8 miles of new permanent road construction, all on historic road templates, only [2 stream crossings] and 12.3 miles of new temporary roads [5.2 miles on historic road templates, 2 stream crossings], with approximately 156 miles of road reconstruction or pre-haul maintenance).

   We generally encourage minimization of new road construction to minimize potential adverse environmental effects associated with roads, although we also recognize the need for road access for conduct of vegetation management activities. We are concerned about increasing the already high road density in the project area, and the potential adverse effects of further increasing road density in the project area. We support the road proposals with Alternatives 3 and 5 over those of Alternative 2 and 4 in order to minimize construction of additional roads in the area.

8. The scale of the alternatives maps in Chapter 2 make it difficult to clearly discern the location of proposed new roads in relation to streams and wetlands and other environmentally sensitive areas, although the DEIS does identify the number of new road stream crossings that would occur. We

recommend that the location of new roads in relation to streams and wetlands and other environmentally sensitive areas be more clearly presented and/or discussed in the FEIS. Have all practicable efforts been made to locate roads in areas that avoid impacts to streams and wetlands, as well as erosive areas and/or geologically unstable areas?

9. The DEIS states that there is "no potential to deliver sediment" to the stream channels in many of the watersheds from road construction activity (pages 34, 35, Vol. 2). While we agree that with proper road planning and design, proper use of BMPs and other mitigation measures sediment production and transport to streams from roads can be minimized, some erosion and sediment production and transport from road construction is still likely to occur. The DEIS soils impacts analysis states that "erosion is expected from temporary road construction and re-construction where native surfaces are exposed to rainfall impact and overland flow," and "road construction would result in soil displacement, compaction, and erosion" (page 116, Vol. 2). This is inconsistent with the statement that there is "no potential to deliver sediment" from road construction. The DEIS also reports that the total annual sediment yield estimate from the existing road system in the analysis area is approximately 32,110 pounds (15.16 tons) per year (page 15, Vol. 2). Potential erosion rates roads are shown in Table 3-126 and other sediment yield tables (e.g., Table 3-111), and we note that some erosion would likely occur over the long-term with new permanent roads. Construction of additional roads in the area will likely increase the sediment yield from the road system.

   We suggest stating that properly planned and designed road construction along with ongoing provision of appropriate road maintenance over time should "minimize sediment delivery" to streams rather than stating there is "no potential to deliver sediment" to streams. We doubt that there is "no potential for sediment delivery" to streams from road construction, and as noted above the soils section of the DEIS refutes such a statement.

10. The DEIS indicates that the Forest Service began closing roads for wildlife habitat improvement in the mid-1980's, and 54.5 miles of roads have been bermed in the project area since that time (pages 14, Vol. 2). However, we did not see any road removal/decommissioning included in the proposed Wild Cramer project. EPA supports road decommissioning and reductions in road density, particularly in areas such as this with high road density.

    As stated above increasing road density, especially road stream crossing density and density of roads encroaching on streams and riparian areas can adversely affect water quality and aquatic habitat. Also, lower road densities are often associated with improved wildlife habitat, connectivity and security, as well as improved trout habitat. In addition, there is often a relationship between higher road density and increased forest use and increased human caused fire occurrences. Reduction in road density, therefore, may also reduce risks of human caused fires, which could be important in an area with high fuels/fire risk and/or wildland/urban interface issues such as the Wild Cramer project area.

    We ask if there are there any opportunities to remove or decommission additional roads in the project area in association with the Wild Cramer project to help offset effects of new proposed roads.

and thus, avoid further increasing the already high road density in the project area? We support decommissioning of roads that impact sensitive resources and roads which are difficult to maintain and/or where there are inadequate funds for road maintenance. We encourage closure or decommissioning of roads near streams, and roads with many stream crossings, since removal of these roads are more likely to have more water quality benefits than closure and decommissioning of roads on upper slopes and ridges.

11. It is important to assure that appropriate BMPs are implemented on existing and new roads to address road drainage and sediment/erosion control concerns and to properly roads over time (e.g., installing drainage dips or surface water deflectors, armoring drainage structures, grading and replacement of aggregate to reinforce wet surface areas, ditch construction and cleaning, removing and replacing undersized culverts). Improperly maintained roads can result in increased stream sedimentation and degradation of aquatic habitats.

    While the DEIS states that the vast majority of the Forest Service road system in the project area have road drainage BMPs installed and are functioning (page 15, Vol. 2), it also states that there is very limited mileage of roads in the project area that have routine road maintenance (grading) completed on an annual basis (page 37, Vol. 2). We are concerned about the adequacy of Forest Service funding to provide proper road maintenance over time, since routine road maintenance is often needed to avoid road drainage problems and sediment delivery to streams, and funding for road maintenance is often limited.

    We encourage routine conduct of inspections and evaluations to identify conditions on roads and other anthropogenic sediment sources that may cause or contribute to sediment to streams, and to include activities in the project to correct as many of these conditions and sources as possible. The need for additional road BMPs is acknowledged for Road 917 (Blacktail Mountain Road) where additional road drainage BMPs is needed to decrease road surface erosion and sediment production during snowmelt periods (e.g., drive-thru-dips, sediment traps, and the removal of road-cutslope vegetation (trees) to facilitate snow plowing) (pages 15, 37, Vol. 2). Road 917 is stated to be a major sediment source to lower Stoner Creek. The increased suspended sediment and nutrient levels measured in the lower portions of Stoner Creek are directly attributable to erosion of Road 917. The DEIS also states that Road 2991(section 25) needs additional road drainage dips installed.

    It is not clear to us if the FNF will be able to address these road maintenance issues with the Wild Cramer project or via other means. The FEIS should include additional discussion of the FNF program to conduct road BMP audits or inspections of all forest roads in the Island Unit on a routine basis, and the adequacy of funding to implement and maintain road BMPs when they are found to be in need of repair. If existing roads cannot be properly maintained, it adds to concerns regarding future maintenance of new roads added to the system.

12. It is surprising that Table 3-99, "Alternative 2 - modeled potential sediment yield for analysis watersheds," indicates that the activity producing by far the most sediment are the prescribed burns (Ecoburns), which are estimated to produce 1,551.2 tons of sediment or about 98% of all the

sediment produced from the project. The DEIS indicates that there would be five prescribed burn areas proposed in Alternative 2, ranging from 6 to 85 acres and totaling approximately 228 acres, and that there are no perennial or intermittent stream channels within the proposed burn unit boundaries, and low intensity burns are planned (page 37, Vol.2).

Sediment from roads (culverts) is estimated at 14.4 tons; sediment from timber management road treatments is estimated at 13.8 tons; and sediment from culvert upsizing is estimated at 7.9 tons in comparison to the 1,551.2 tons of sediment estimate from the Ecoburns. An overwhelming amount of the overall sediment yield is predicted to occur from the low intensity prescribed burns. These high sediment yield predictions are based on anticipating a number of short-duration, high-intensity rainstorms occurring shortly (2 to 3 weeks) after the burn treatment. However, it is also stated that this would be a "low-probability event" and even "a worst-case scenario." In addition it states that a great deal of sediment from burns would be filtered out by vegetation in unburned buffer areas prior to entering a stream channel (page 38, Vol.2).

The sediment and nutrient yield tables in Chapter 3 appear to show that Alternative 4 would result in the least adverse effects to water quality, since Alternative 4 is predicted to have the least nutrient and sediment yields (i.e., 7,979 lbs. of nitrogen, 2,458 lbs. of phosphorus, Table 3-106; 1,294 tons of sediment, Table 3-105). Table 3-119 (page 84, Vol. 2) shows the cumulative potential sediment and nutrient yield of each alternative, showing Alternative 4 to have the least sediment and nutrient yield followed by Alternatives 3, 5, and 2. Alternative 3 is predicted to have 9,588 lbs. of nitrogen, 3,005 lbs. of phosphorus, and 1,435 tons of sediment (Table 3-103, Table 3-102); Alternative 5 is predicted to have 10,374 lbs. of nitrogen, 3,242 lbs. of phosphorus, and 1,578 tons of sediment (Table 3-109, Table 3-108); and Alternative 2 is predicted to have 12,186 lbs. of nitrogen, 3,916 lbs. of phosphorus, and 1,588 tons of sediment (Table 3-100, Table 3-99).

Analysis of the sediment and nutrient yield Chapter 3 tables show that Alternatives 4 and 3 evidence lower nutrient and sediment yields due to lower acreages of Ecoburns. Alternatives 4 and 3 include Ecoburns on 170 acres and 200 acres, respectively, whereas prescribed burning is proposed on 228 acres with Alternatives 5 and 2 (Table 2-18). As noted above the nutrient and sediment yields from Ecoburns are high due to projected rainfalls following burning activities that have a low probability of occurring. It appears to us that these low probability events skew the overall sediment and nutrient yield data in the sediment and nutrient yield tables (e.g., Table 3-99). We note that the sediment yields from roads and timber management are much more probable than the sediment predicted from the low probability rain events projected to occur after prescribed burns. The DEIS discusses these matters (page 42, Vol. 2). It would be of interest to disclose estimated sediment yields from Ecoburns where low probability rain events did not occur immediately following burning activities.

It is interesting that Alternative 5, developed to address the issue of water quality and quantity issue, is shown to have a higher sediment and nutrient yield than Alternatives 4 and 3 which were developed to address fragmentation and connectivity of old forest habitat, and wildlife security and big game winter range thermal/snow intercept cover issues. We generally have greater concerns regarding sediment production and transport to streams from road activities than from burn

activities, since the probability of sediment transport from roads is greater than from prescribed burns, and sediment delivery from roads to streams is often a longer-term, more chronic condition. We also note that sediment produced during a wildfire would likely be far higher than that associated with prescribed fire, so we consider the reduction of wildfire risk and intensity due to use of prescribed fire.

As discussed earlier, Alternative 5 proposes 17.1 miles of new road (4.8 miles of new permanent road, all on historic road templates, with 2 stream crossings, and 12.3 miles of new temporary roads (5.2 miles on historic road templates) with 2 stream crossings and with approximately 156 miles of road reconstruction or pre-haul maintenance; and Alternative 3 proposes 13.4 miles of new road (7.9 miles of new permanent roads (3.3 miles on historic road templates) with 2 stream crossings and 1 drive-through dip, and 5.5 miles of new temporary roads (2.1 miles on historic road templates) with 2 stream crossings and approximately 113 miles of road reconstruction or pre-haul maintenance. These are lesser amounts of new road than proposed with Alternatives 2 (27.5 miles of new road with 13.1 miles of new permanent roads and 14.4 miles of new temporary roads) and Alternative 4 (19.3 miles of new road with 9.6 miles of new permanent roads and 9.7 miles of new temporary roads). Accordingly it appears to us that Alternatives 3 and 5, with the least amount of proposed new road, would likely have less adverse ecological effects associated with new roads than Alternatives 2 and 4.

13. It is stated that the results of the modeled potential sediment associated with timber sale road maintenance are summarized in Table 3-98 for each analysis watershed (page 37, Vol. 2). However, it appears that the narrative should refer to Table 3-99 (pages 42, 43, Vol. 2) rather than Table 3-98 (page 41, Vol. 2), since Table 3-98 appears to show sediment production associated with upsizing of 9 culverts rather than from road maintenance.

14. Nine culverts have been identified for replacement on the roads 2957, 9892, 9893, 916 (5 culverts) and 10138 in the Truman Creek and East South Fork Stoner Creek (page 30, Vol. 1, page 99, Vol. 2) to reduce risk of culvert failure. We support this culvert replacement activity, but note that we did not see much discussion of fish passage considerations in regard to culverts (i.e., either for existing culverts and culverts that will upsized and replaced). We recommend that adequacy of existing and upsized culverts in regard to fish passage on existing and proposed new roads in the project area be discussed in the FEIS.

    We note that a FS Region 1 study reported that 80% of surveyed road culverts impeded passage of cutthroat trout at some life stage or during certain flows, http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb5117508.pdf . The Forest Service has been a leader in recognizing that road stream crossings often impede passage of aquatic organisms, and designing for aquatic organism passage, http://www.fs.fed.us/biology/education/workshops/aop/index.html . We encourage upgrading of culverts where such activity may improve fish passage at road stream crossings. Will the existing and proposed new road culverts in the Wild Cramer project area provide adequate fish passage?

15. The DEIS indicates that unauthorized motorized use occurs within the project area (page 30, Vol. 1),with motorists accessing closed roads at junctions with open roads (driving around or destroying closure devices) where they access closed roads through connector routes and off road travel. We are pleased that efforts will be made to reduce this unauthorized use and prevent an increase in use on new roads and reconstructed roads and post activity roads by reestablishing road closures after project activities have occurred and installing additional closure devices at more effective locations beyond the entry closure devices (page 31, Vol. 1). We also appreciate the information on road closure devices and strategies provided in Appendix A.

16. For your information our general recommendations regarding roads are as follows:

* minimize road construction and reduce road density as much as possible to reduce potential adverse effects to watersheds;

* locate roads in uplands, away from streams and riparian areas as much as possible;

* minimize the number of road stream crossings;

* locate roads away from steep slopes or erosive soils and areas of mass failure;

* stabilize cut and fill slopes;

* provide for adequate road drainage and control of surface erosion with measures such as adequate numbers of waterbars, maintaining crowns on roads, adequate numbers of rolling dips and ditch relief culverts to promote drainage off roads avoid drainage or along roads and avoid interception and routing sediment to streams;

* consider road effects on stream structure and seasonal and spawning habitats;

* allow for adequate large woody debris recruitment to streams and riparian buffers near streams;

* properly size culverts to handle flood events, pass bedload and woody debris, and reduce potential for washout;

* replace undersized culverts and adjust culverts which are not properly aligned or which present fish passage problems and/or serve as barriers to fish migration;

* use bridges or open bottom culverts that simulate stream grade and substrate and that provide adequate capacity for flood flows, bedload and woody debris where needed to minimize adverse fisheries effects of road stream crossings.

Blading of unpaved roads in a manner that contributes to road erosion and sediment transport to streams and wetlands should be avoided. It is important that road grading focus on reducing road

surface erosion and sediment delivery from roads to area streams. Practices of expediently sidecasting graded material over the shoulder and widening shoulders and snow plowing can have adverse effects upon streams, wetlands, and riparian areas that are adjacent to roads. These practices should be avoided.

Roads are particularly vulnerable to damage during spring breakup as overly-saturated roadbeds from winter freezing are working to dry out, and this typically occurs between March 30 and June 30, but can vary depending on the severity of the winter and spring weather conditions. We encourage avoiding road use during spring breakup conditions, and closing roads to log haul during spring break up to reduce rutting of roads that increase road erosion and sediment delivery, and graveling of haul roads. Snow plowing of roads later in winter for log haul should also be avoided to limit runoff created road ruts during late winter thaws that increase road erosion (i.e., ruts channel road runoff along roads increasing erosion and sediment transport).

Forest Service Region 1 provides training for operators of road graders regarding conduct of road maintenance in a manner that protects streams and wetlands, (i.e., Gravel Roads Back to the Basics). If there are road maintenance needs on unpaved roads adjacent to streams and wetlands we encourage utilization of such training (contact Fred Bower FS R1 Transportation Management Engineer, at 406-329-3354).

We also note that there are training videos available from the Forest Service San Dimas Technology and Development Center for use by the Forest Service and its contractors (e.g., "Forest Roads and the Environment"-an overview of how maintenance can affect watershed condition and fish habitat; "Reading the Traveled Way" -how road conditions create problems and how to identify effective treatments; "Reading Beyond the Traveled Way"-explains considerations of roads vs. natural landscape functions and how to design maintenance to minimize road impacts; "Smoothing and Reshaping the Traveled Way"-step by step process for smoothing and reshaping a road while maintaining crowns and other road slopes; and "Maintaining the Ditch and Surface Cross Drains"-instructions for constructing and maintaining ditches, culverts and surface cross drains).

17. We appreciate the DEIS analysis and evaluation of potential nutrient effects of proposed timber management and prescribed burning activities, including evaluation relative to the "Nutrient Management Plan and Total Maximum Daily Load for Flathead Lake, Montana." The DEIS states that while proposed activities will result in additional nutrient transport to streams in the project area, and thus, to Flathead Lake the amount of nutrient increase in the lake would not be discernible above natural variability of lake nutrient levels (page 47, Vol. 2). The DEIS also states that while there would be measureable increases in nutrients in lower Truman Creek and lower Stoner Creek these nutrient increases would be short-lived and not result in significant adverse effects.

18. We appreciate the analysis of potential water yield and effects on stream channel stability in the Hydrology section of Volume 2 of the DEIS where it states that all of the stream reaches in the project area are in stable condition and can accommodate significant water yield increases with little or no change to the stream channel morphology. Although it does state that there is an exception on

one stream reach on the West-South Fork of Stoner Creek (located in the west half of section 21) on NFS ownership that has a poor stability rating and notable stream channel erosion and/or deposition occurring (page 12, Vol. 2).

The modeled water yield increases in the West-South Fork of Stoner Creek are shown to be 15.7% (6.6% increase above existing levels) in Alternative 2 (Table 3-94, page 30, Vol. 2). This is a very high water yield for a channel with existing instability conditions. We support the proposed elimination of 8 harvest units in this watershed in Alternative 5 that would reduce the water yield increase to 12.6% (3.5% increase above existing levels) in the West-South Fork of Stoner Creek(page 57, Vol. 2). We note also that the DEIS states that the West Fork Stoner Creek provides the best fishery habitat with numerous deep pools and overhead cover present (page 92, Vol. 2), further emphasizing the need to protect this fishery habitat.

The water yield increases for the proposed action in the South Fork of Cramer Creek, North Fork of Stoner Creek and in Trib. 1 Stoner Creek are also very high, and create concerns about potential channel/bank stability (i.e., 21.9% (6.2% increase above existing levels), 16.3% (6.3% increase above existing levels), and 16.5% (7.9% increase above existing levels), respectively, in these streams). The water yield increase in the North Fork of Stoner Creek is only reduced to 15.8% (5.8% increase above existing levels) with Alternative 5 (page 57, Vol. 2), and the water yield increase in the South Fork of Cramer Creek is only reduced to 21.7% (6.0% increase above existing levels), and the water yield increase in Trib. 1 Stoner Creek remains at 16.5% (7.9% increase above existing levels) with Alternative 5. These all appear to still be very high water yield increases, even in Alternative 5 that was prepared to address water quality and quantity issues.

In regard to the South Fork of Cramer Creek it is stated that there is an ephemeral draw without an established stream channel below NFS land which enters Plum Creek Land and then private land; and this ephemeral creek eventually goes subsurface once it enters private lands, and the draw shows no effect from the water yield increase from past timber harvest (page 28, Vol. 2). This suggests that the high water yield in the South Fork of Cramer Creek will not result in channel erosion problems.

However, we did not see similar discussion of the potential effect of the predicted high water yield increases on the North Fork of Stoner Creek and Trib. 1 Stoner Creek. Is the Flathead National Forest sure that projected increases in water yield in these watersheds will not adversely affect stream channel or bank stability in the North Fork of Stoner Creek and Trib. 1 Stoner Creek? We recommend that the FEIS discuss potential effects on these stream channels in regard to the predicted high water yield increases. Will some modification in vegetation treatments in these drainages be needed to avoid stream channel instability?

19. It is likely that some proposed activities involving disturbance to streams will require regulatory agency permits and authorizations (e.g., road construction, reconstruction, culvert replacements). We appreciate the DEIS identification of permits and authorizations needed to implement the proposed project, including a Federal Clean Water Act Section 404 Permit, Montana Streamside Protection Act Permit (SPA 124 Permit), a Montana Pollutant Discharge Elimination System (MPDES)

Stormwater Discharge General Permit, and Short-term Water Quality Standard Turbidity Authorization (318 Authorization) (page 8). We encourage the FNF to contact Mr. Todd Tillinger of the U.S. Army Corps of Engineers, Montana Office in Helena at 406-441-1375 or Ms. Christina Schroeder of the Corps of Engineers, Missoula Office at 406-541-4845 extension 328, to determine applicability of 404 permit requirements to proposed construction activities in or near streams or wetlands; and encourage contact with Mr. Jeff Ryan of the Montana DEQ at 406-444-4626 in regard to MDEQ permits and authorizations.

A Montana Stream Permitting Guide is available to explain the various permitting authorities http://dnrc.mt.gov/permits/streampermitting/guide.asp. Also to ease the administrative burden the Federal and State agencies have developed a single permit application for the various potential permits or authorizations that may be needed (http://dnrc.mt.gov/permits/default.asp , http://dnrc.mt.gov/permits/streampermitting/joint_application.asp).

20. Similar to our comment # 9 above, it is stated that there would be "no sediment yield" due to timber harvest/yarding (tractor skidding or cable), slash pile burning, broadcast slash burning, log landing construction/use, slash processing/ transport for pyrolysis processing, and road drainage BMP installation (page 41, Vol. 2). While we agree that with proper use of BMPs, proper planning and use of appropriate mitigation measures sediment production and transport to streams from vegetation treatment activities should be minimal, it is likely that some erosion and sediment production and transport may still occur. We suggest stating that such activities should result in "minimal sediment yield" rather than "no sediment yield."

21. Proposed management activities, including timber harvest with ground based equipment, construction of temporary roads, skid trails, landings, and use of prescribed fire, could all impact water quality by disturbing soils and promoting erosion and sediment transport to streams and other water bodies. As noted in our comment #3 above ground based tractor harvests have greater potential for soil disturbance and sediment production and transport. The overall amount of tractor harvest for each action alternatives was not summarized and clearly disclosed in Chapter 2 descriptions of alternatives, although we estimate that tractor harvests are greatest with Alternatives 2 and 5 and least with Alternatives 3 and 4. We generally encourage use of less ground disturbing timber harvest methods for harvests on erosive soils such as skyline cable or winter logging over snow or on frozen ground.

We appreciate the analysis and discussion of potential effects on soils in Chapter 3 of the DEIS. Table 3-123 (page 108, Vol. 2) showing that the treatment area includes no landtypes with severe erosion hazards, and that the majority of proposed tractor harvest treatments are planned for areas with slopes less than 40 percent (reducing risk of mass failures). We also appreciate the mitigation measures, design criteria and BMPs proposed to protect soils and reduce erosion during and after harvests (e.g., 75 foot skid trail spacing, slash and waterbars on skid trails, seeding and revegetation of bare soils, woody debris retention for soil productivity, etc. Table 2-17, Appendix B).

We fully support such use of less damaging harvest methods (winter logging, skyline cable logging) on sensitive soils, and use of appropriate BMPs and erosion control practices. We often suggest mitigation measures such as use of existing skid trails wherever possible; restrictions on skidding with tracked machinery in sensitive areas; using slash mats to protect soils; constructing water bars; creating brush sediment traps; adding slash to skid trail surfaces after recontouring and ripping; seeding/planting of forbs, grasses or shrubs to reduce soil erosion and hasten recovery; as well as recontouring, slashing and seeding of temporary roads and log landing areas following use to reduce erosion and adverse impacts to soils.

We are pleased that Table 3-127 (pages 117 to 126, Vol. 2), showing estimates of existing and potential percent detrimental soil disturbance increases for each treatment unit in each alternative, indicates that all treatment units would be in compliance with the Forest Service Regional standard for no more than 15 percent detrimental soil disturbances.

22. We are pleased that downed woody debris would be retained for wildlife (i.e., 10 tons per acre, where available, Table 2-17), since this is also likely to maintain long-term soil productivity. It is important that adequate amounts of woody debris be retained on-site following vegetative treatments to maintain soil productivity.

23. EPA considers the protection, improvement, and restoration of wetlands and riparian areas to be a high priority. Wetlands and riparian areas increase landscape and species diversity, and are critical to the protection of designated water uses. Executive Order 11990 requires that all Federal Agencies protect wetlands. It is important that wetlands and riparian areas be properly managed to maintain and restore the health of watersheds and aquatic resources to sustain aquatic and terrestrial species and provide water of sufficient quality and quantity to support beneficial uses. Adequate riparian vegetation in stream-side areas must be maintained to stabilize streambanks and stream channels during floods and other periodic high flow events.

    Riparian Habitat Conservation Areas (RHCAs) are an important management element in the Interior Columbia Basin (ICB) Strategy to maintain and restore the health of watersheds, riparian, and aquatic resources to sustain aquatic and terrestrial species and provide water of sufficient quality and quantity to support beneficial uses (see http://www.icbemp.gov/html/icbstrat.pdf ; and "A Framework for Incorporating the Aquatic and Riparian Habitat Component of the Interior Columbia Basin Strategy into BLM and Forest Service Plan Revisions," http://www.icbemp.gov/html/aqripfrm7804.pdf . It is important that proposed activities be consistent with the riparian management objectives described in the ICB Strategy, which include:

    * Achieve physical integrity of aquatic ecosystems;
    * Provide an amount and distribution of woody debris sufficient to sustain physical and biological complexity;
    * Provide adequate summer and winter thermal regulation;
    * Provide appropriate amounts and distributions of source habitats for riparian- or wetland-dependent species; and

* Restore or maintain water quality and hydrologic processes.
* Restore or maintain naturally functioning riparian vegetation communities.

We are pleased that all units were designed to meet the Riparian Habitat Conservation Area (RHCA) requirements under INFISH to protect the stream channel and maintain water quality and aquatic habitat, and that all of the wetlands and/or riparian areas would have buffers around them to meet either INFISH or the Montana Streamside Management Zone Law, whichever has the greatest buffer distance (page 87, Vol. 2). RHCAs widths would be 300 feet for all fish-bearing streams in the project area with activities proposed along them (e.g. Stoner, Wild Bill, Truman, Emmons, and Patrick creeks); 150 feet for perennial non-fish bearing streams and wetlands greater than 1 acre; and 50 feet for intermittent streams and wetlands less than 1 acre, page 97, Vol. 2).

Although the DEIS states that Alternative 2 would allow for some thinning and/or tree harvest inside the INFISH and Montana SMZ buffer zones on units 29, 41, 42, and 79 via a combination of directional felling, pulling cable and yarding from outside the buffer zone, and/or having full suspension of logs within the buffer zone (page 32, Vol. 2), we support the proposal in Alternative 5 to drop portions of the proposed treatments in riparian habitat conservation areas (within units 41/42/44, 29, and 79). If some riparian treatments are included with the preferred alternative we suggest that the Forest hydrologist and/or fisheries biologist be required to be present when crews are laying out treatment units and marking trees in commercial or non-commercial treatments within riparian areas along streams to ensure adequate riparian and stream protection. We also recommend that all harvest units be reviewed in the field to determine the presence of wetlands, and that wetlands be identified on the Sale Area Map and flagged on the ground to better assure that timber contractors will be able to avoid them.

Monitoring

24. We believe monitoring should be an integral part of land management. The EPA endorses the concept of adaptive management whereby effects of implementation activities are determined through monitoring (i.e., ecological and environmental effects). It is through the iterative process of setting goals and objectives, planning and carrying out projects, monitoring impacts of projects, and feeding back monitoring results to managers so they can make needed adjustments, that adaptive management works. In situations where impacts are uncertain, monitoring programs allow identification of actual impacts, so that adverse impacts may be identified and appropriately mitigated.

We appreciate the discussion of monitoring in Chapter 2 of the DEIS (pages 82-85, Vol. 1), and the listing of BMPs and discussion of BMP monitoring and evaluation in Appendix B, although we are concerned that the DEIS states that funding for monitoring has not yet been made at this time, and future availability of monitoring funds is unknown (page 85, Vol. 1). It is important to provide adequate monitoring budget, particularly to monitor BMP effectiveness, since it helps assure that BMPs were properly placed on the ground in regard to both road construction and vegetative

treatments. The achievement of water quality standards for non-point source activities occurs through the implementation of BMPs.

We often also recommend water quality/aquatics monitoring for determining effectiveness in BMPs in protecting water quality. Although BMPs are designed to protect water quality, they often need to be evaluated with water quality monitoring to verify their effectiveness. If found ineffective, BMPs need to be revised, and impacts mitigated. We often recommend that aquatic monitoring be included in projects, using aquatic monitoring parameters such as channel cross-sections, bank stability, width/depth ratios, riffle stability index, pools, large woody debris, fine sediment, pebble counts, macroinvertebrates, etc,. Biological monitoring can be particularly helpful, since monitoring of the aquatic biological community integrates the effects of pollutant stressors over time and, thus, provides a more holistic measure of impacts than grab samples.

We recognize that there are limited resources for water quality monitoring, and that water quality impacts from the proposed Wild Cramer Project activities appear to be low, although adequate road planning, design and road BMPs will be needed during road construction, so there may be reduced need for water quality monitoring to determine actual water quality and aquatic impacts for the Wild Cramer project. We also note that there may be PACFISH/INFISH Biological Opinion (PIBO) monitoring sites in the project area that perhaps could be used to help evaluate actual project effects on water quality and aquatic habitat. (http://www.fs.fed.us/biology/fishecology/emp/index.html). If there are PIBO monitoring sites in the area perhaps they may be considered for their potential to evaluate project water quality effects.

25. We are pleased that soil monitoring would be performed post-implementation to determine if selected units met Region 1 Soil Quality Standards (e.g., skid trails meeting specified spacing requirements), and that restoration efforts would be undertaken on units where detrimental soil disturbance is found to exceed 15 percent (page 128, Vol.2).

Air Quality

26. Burning is proposed with all action alternatives. The proposed action includes the most burning (i.e., 3,779 acres of pile burning, 1,434 acres of broadcast burning, burning of slash on 251 piles on landings, and underburning on 228 acres (Table 3-134, page 177, Vol. 2). Alternatives 3, 4 and 5 include lesser amounts of burning. The EPA supports judicious and well planned use of prescribed fire to reduce hazardous fuels and restore fire to forest ecosystems, and the national goal reduce the risk of uncontrolled wildfire in wildland-urban interface areas.

Of course as you know smoke from fire contains air pollutants, including tiny particulates (PM_{10} and $PM_{2.5}$) which can cause health problems, especially for people suffering from respiratory illnesses such as asthma or emphysema, or heart problems. PM_{10} and $PM_{2.5}$ particles are both of concern, although $PM_{2.5}$ is greater concern because it can penetrate into the lungs whereas larger particles (included in the coarse fraction of PM_{10}) deposit in the upper respiratory tract. Particulate concentrations that exceed health standards have been measured downwind from prescribed burns. It

is important that proposed burning activities, when combined with air quality impacts from external sources, do not exceed National Ambient Air Quality Standards (NAAQS); and that smoke not reduce visibility or diminish the appreciation of scenic vistas in the nation's National Parks and Wilderness Areas (identified as mandatory Class I Federal areas).

We appreciate the Chapter 3 analysis and discussion of potential effects to air quality from prescribed burning activities (pages 173 to 179, Vol. 2), including the disclosure of information about the Flathead County Air Quality hotline and the Montana/Idaho Airshed Group (www.smokemu.org) that all burning will comply with the State Smoke Management Plan (Table 2-17). We also appreciate the identification of nearby cities designated as non-attainment areas for PM_{10} (Kalispell, Columbia Falls, and Whitefish), and Class 1 air quality areas near the project area (Bob Marshall Wilderness Area east of the project area and in the direction of prevailing winds).

We note that the Flathead Indian Reservation Class 1 air quality area is also in close proximity to the project area (south of the project area), Glacier National Park (northeast of the project area) and should also be evaluated in regard to visibility effects. In addition we generally encourage inclusion of a map in the air quality section of the EIS showing the relative locations of Class 1 areas and PM_{10} and $PM_{2.5}$ non-attainment areas in order to more clearly display locations of sensitive air quality areas relative to burn areas for the public.

The DEIS indicates that the Smoke Impacts Spreadsheet (SIS) was used to model smoke dispersion and concentrations for each alternative, and that all areas over 1 mile from concentrated burning would be below the $PM_{2.5}$ 35 $\mu g/m^3$ 24-hour average NAAQS (page 178, Vol. 2). We note that Tables 3-134 to 3-137 appear to show that pile burning may result in some borderline exceedances of the 35 $\mu g/m^3$ $PM_{2.5}$ 24-hour average NAAQS within 1 mile from pile burns.

We are pleased that the DEIS states that the cumulative effects of Wild Cramer prescribed burning alternatives would not lead to a violation of air quality standards (page 179, Vol. 2). However, we recommend that the FEIS include: (1) discussion of appropriate smoke monitoring techniques and mitigation to minimize effects to nearby residents downwind of prescribed burns (including meteorological conditions favorable for mitigated prescribed fire smoke and alternatives to prescribed fire such as mechanical fuel reduction methods); and (2) requirements for the incorporation of the Interagency Prescribed Fire Planning and Implementation Procedures Guide (July 2008, http://www.nwcg.gov/pms/RxFire/rxfireguide.pdf) into the site-specific burn plans designed for each prescribed burn conducted under this project.

We also recommend FEIS disclosure that smoke management programs depend on favorable meteorological conditions to disperse smoke, but that despite best efforts to predict favorable conditions, the weather can change causing smoke not to disperse as intended. This can be especially problematic for smoldering pile burns when a period of poor ventilation follows a good ventilation day. Accordingly, it is important that the public be notified about burning near residences and the potential for high smoke concentrations to occur. We suggest that pile burn units be burned one unit at a time to avoid cumulative smoke effects between units.

27. It is stated (pages 28, 29, Vol. 1) that non-traditional post-harvest treatments such as pyrolysis may also be used to process forest biomass to extract energy content to create bio-oil or other energy products. Pyrolysis is described as an emerging technology that the Forest Service is studying in some areas of the country to promote soil productivity via production of biochar from forest biomass which can be applied to soils. We note that pyrolysis of forest biomass also has potential to reduce air pollutant emissions by reducing burning of logging slash. This could reduce air pollutant emissions, which could be an important benefit since the Wild Cramer project area is located near the PM_{10} air quality non-attainment areas of Kalispell, Whitefish and Columbia Falls and the Flathead Indian Reservation, Bob Marshall Wilderness and Glacier National Park Class I air quality areas. In addition biochar can retain carbon for long periods, giving pyrolysis a potential benefit in reducing greenhouse gas emissions as well.

    The DEIS states that in the event biomass conversion is economically feasible, logging slash would be chipped at the landing sites and converted to bio-derived fuels. It is not clear, therefore, if pyrolysis of forest biomass is actually being proposed on the Wild Cramer project or is just considered as a possibility. If pyrolysis of logging slash is proposed it would be of interest in the FEIS to disclose the extent to which forest biomass (logging slash) may be pyrolyzed, and the extent to which such pyrolysis may reduce air pollutant emissions from open burning. We very much encourage the Flathead NF to consider pyrolysis of logging slash as an alternative to burning slash due to its many benefits.

28. The National Ambient Air Quality Standard (NAAQS) for $PM_{2.5}$ is identified as 35 mg/m^3 for the 24-hour average on pages 176 and 178 (Volume 2). This is likely a typographical error since the NAAQS for the 24 hour average $PM_{2.5}$ is 35 $\mu g/m^3$, but we recommend that this error be corrected in the FEIS.

    Climate Change

29. Climate change research indicates that climate is changing, and that the change will accelerate, and that human greenhouse gas (GHG) emissions, primarily carbon dioxide emissions (CO2), are the main source of accelerated climate change (United Nations Intergovernmental Panel on Climate Change (IPCC) , http://www.ipcc.ch/). The Forest Service has developed guidance on consideration of climate change in project-level NEPA documents (see at, http://www.fs.fed.us/emc/nepa/climate_change/includes/cc_nepa_guidance.pdf), that suggests EIS analysis and disclosure of the following:

    • The effect of a proposed project on climate change (GHG emissions and carbon cycling). Examples include: short-term GHG emissions and alteration to the carbon cycle caused by hazardous fuels reduction projects, and avoiding large GHG emissions pulses and effects to the carbon cycle by thinning overstocked stands to increase forest resilience and decrease the potential for large scale wildfire.

• The effect of climate change on a proposed project. Examples include: effects of expected shifts in rainfall and temperature patterns on the seed stock selection for reforestation after timber harvest and effects of changed stream hydrographs due to earlier snowmelts.

The Forest Service also has informative guidance on the role of climate change in driving at least some bark beetle outbreaks (http://www.fs.fed.us/ccrc/topics/bark-beetles.shtml). Temperature influences everything in a bark beetle's life, from the number of eggs laid by a single female beetle, to the beetles' ability to disperse to new host trees, to individuals' over-winter survival and developmental timing. Elevated temperatures associated with climate change, particularly when there are consecutive warm years, can speed up reproductive cycles and reduce cold-induced mortality. Shifts in precipitation patterns and associated drought can also influence bark beetle outbreak dynamics by weakening trees and making them more susceptible to bark beetle attacks, o seedlings, and affect the ability of trees to prosper through time, and may have added to stress factors leading or affecting the current bark beetle attacks.

EPA Region 8 suggests a general four step approach to address climate change in NEPA documents that appears consistent with the Forest Service guidance.

- Briefly discuss the link between greenhouse gases (GHGs) and climate change, and the potential impacts of climate change, (see http://www.epa.gov/climatechange/ , http://www.fs.fed.us/ccrc/ , http://www.ipcc.ch/).
- Describe the capacity of the proposed action to adapt to projected climate change effects, including consideration of future needs.
- Characterize, quantify and disclose the expected annual cumulative emissions of GHGs attributable to the project, using annual CO2-equivalent as a metric for comparing the different types of GHGs emitted. It is suggested that the project's emissions be described in the context of total GHG emissions at regional, national and global scales (over the lifetime of the project).
- Discuss potential means to mitigate project-related emissions as appropriate pursuant to CEQ regulations (40 CFR Sections 1502.14(f), 1502.16(h), 1508.14).

The Wild Cramer DEIS includes discussion of climate change in regard to effects on forest vegetation (pages 192-194, Volume 1), and hydrology (pages 22-26, Vol. 2), and also integrates climate change discussion into other Chapter 3 discussions of the affected environmental and environmental consequences (e.g., wildlife). It reports that average annual temperatures are warming, mountain snowpacks are declining, and spring runoff is occurring earlier in western Montana; and that the global average surface temperature increased 0.74 degrees Centigrade from 1906 to 2005, and additional increases of 1.1 to 6.4 degrees Centigrade are projected by 2100 (i.e., increases above the 1990 temperatures). These higher temperatures stress forest ecosystems by exacerbating negative water balance, reduce photosynthesis; increase insect and disease problems and forest mortality from beetle outbreaks; change watershed hydrology and fish and wildlife effects; and increase wildfire risks. We also note that climate change affects fire behavior with fire activity occurring earlier in the season; more wildland fire starts escaping initial attack; flame length and fire intensity increasing; and fires spreading more rapidly.

We appreciate the inclusion of climate change information and discussion in the DEIS. We believe it is helpful to promote improved public understanding of the effects of climate change with such discussions and disclosures in NEPA documents.

Noxious Weeds

30. Weeds are a great threat to biodiversity and can often out-compete native plants and produce a monoculture that has little or no plant species diversity or benefit to wildlife. Noxious weeds tend to gain a foothold where there is disturbance in the ecosystem, such as road building, logging, livestock grazing or fire activities. EPA supports integrated weed management, and recommends weed control measures at the earliest stage of invasion to reduce impacts to native plant communities. Weed prevention is the most cost-effective way to manage and control weeds by avoiding new infestations and spread of weeds, and thus, avoiding the need for subsequent weed treatments. We also encourage tracking of weed infestations, control actions, and effectiveness of control actions in a Forest-level weed database.

We appreciate the DEIS analysis and discussion of invasive plant species (pages 227 to 247, Vol. 1), and are pleased that Table 2-17 includes design features to control weeds (e.g., seeding/ revegetation of bare ground; washing equipment; spraying weeds; etc.). It states that almost all of the infestations in the project area are on roadsides or are associated with roads (page 230, Vol. 1), and references the Noxious and Invasive Weed Control Decision Notice of 2001. The DEIS indicates that as funds allow, the forest botanist, botany technicians, forest noxious weed specialist, or noxious weed crew, would survey and monitor for weeds in all ground-disturbed areas in treatment units roads, and temporary roads. Weed monitoring would occur for at least 3 years following project activities (page 86, Vol. 1). It also states that herbicide is the most commonly used treatment to kill invasive species, and this can also affect native plant species (page 245, Vol.1).

While we support needed herbicide applications for weed control, it should be noted that herbicide drift into streams and wetlands could also adversely affect aquatic life and wetland functions such as food chain support and habitat for wetland species. Efforts should be made to avoid transport of herbicides into surface waters that could adversely affect fisheries and other water uses. The FNF should assure that herbicides and chemicals used for weed control are applied in a safe manner in accordance with Federal label instructions and restrictions that allow protection and maintenance of water quality standards and ecological integrity, and avoid public health and safety problems. Montana Water Quality Standards {Administrative Rules of Montana (ARM) 17.30.6 and 17.30.7} do not include numerical criteria for aquatic life protection for many herbicides, and it is important to recognize that research and data requirements necessary to establish numerical aquatic life water quality criteria are very rigorous, and many herbicides and weed control chemicals in use are toxic, even though numerical aquatic life criteria have not been established. The Montana Water Quality Standards include a general narrative standard requiring surface water "*to be free from substances that create concentrations which are toxic or harmful to aquatic life.*"

Some suggestions to reduce potential water quality and fisheries effects from herbicide spraying are to assure that applicators: 1) are certified and fully trained and equipped with appropriate personal protective equipment; 2) apply herbicides according to the label; and 3) herbicide applicators should take precautions during spraying (e.g., applying herbicide only after careful review of weather reports to ensure minimal likelihood of rainfall within 24 hours of spraying; special precautions adjacent to the stream to reduce runoff potential, etc.; 4) no herbicide spraying will occur in streams and wetlands or other aquatic areas (seeps, springs); 5) streams and wetlands in any area to be sprayed be identified and flagged on the ground to assure that herbicide applicators are aware of the location of wetlands, and thus, can avoid spraying in or near wetlands; 6) use treatment methods that target individual noxious weed plants in riparian and wetland areas (depending on the targeted weed species, manual control or hand pulling may be one of the best options for weed control within riparian/wetland areas or close to water).

We also recommend that road ditches leading to intermittent and perennial streams be flagged as no-spray zones and especially not sprayed with picloram based herbicides. Herbicides should be applied at the lowest rate effective in meeting weed control objectives and according to guidelines for protecting public health and the environment. In addition we recommend that weed treatments be coordinated with the Forest botanist to assure protection to sensitive plants, and coordinated with fisheries biologists and wildlife biologists to assure that sensitive fisheries and wildlife habitat areas are protected.

Please also note that there may be additional pesticide use limitations that set forth geographically specific requirements for the protection of endangered or threatened species and their designated critical habitat. This information can be found at http://www.epa.gov/espp/bulletins.htm . You may also want to consider use of a more selective herbicide (clopyralid) for use in conifer associated communities to reduce impacts on non-target vegetation. In addition we note that spotted knapweed, which is a prevalent noxious weed species in western Montana, is non-rhizomatous and should be relatively easy to control with lower rates of the most selective low toxicity herbicides.

For your information, the website for EPA information regarding pesticides and herbicides is http://www.epa.gov/pesticides/ . The National Pesticide Telecommunication Network (NPTN) website at http://nptn.orst.edu/tech.htm which operates under a cooperative agreement with EPA and Oregon State University and has a wealth of information on toxicity, mobility, environmental fate on pesticides that may be helpful (phone number 800-858-7378).

31. We also believe an effective noxious weed control program should consider restrictions on motorized uses, particularly off-road uses, where necessary. Off-road vehicles travel off-trail, disturbing soil, creating weed seedbeds, and dispersing seeds widely. Weed seeds are often transported by wind and water, animal fur, feathers and feces, but primarily by people. The greatest vector for spread of weeds is through motorized vehicles-cars, trucks, ATVs, motorcycles, and even snowmobiles. Weed seeds are often caught on the vehicle undercarriage in mud and released on the Forest. A single vehicle driven several feet through a knapweed site can acquire up to 2,000 seeds, 200 of which may still be attached after 10 miles of driving (Montana Knapweeds: Identification,

Biology and Management, MSU Extension Service). Weed seed dispersal from non-motorized travel is of lesser concern because of fewer places to collect/transport seed, and the dispersal rate and distances along trails are less with non-motorized travel. Restrictions on motorized uses may be needed after burning and harvest activities until native vegetation is reestablished in the disturbed areas to reduce potential for weed infestation of the disturbed sites. As noted in our comment #15 above we appreciate the FNF's proposed efforts to reduce unauthorized motorized uses in the project area.

Forest Vegetation

32. The DEIS discussion of forest vegetation (pages 99-200, Vol. 1) provides helpful information regarding forest vegetative conditions, including forest structure and composition, disturbance processes, insects and pathogens, etc.. EPA supports vegetative treatments to reduce forest susceptibility to insect and disease agents and fire risks, and we support protection of old growth stands as much as possible, since they are ecologically diverse and provide good breeding and feeding habitat for many bird and animal species (e.g., barred owl, great gray owl, pileated woodpecker). Much old growth habitat has already been lost, and it is important to prevent continued loss of old growth habitat and promote long-term sustainability of old growth stands, and restore where possible the geographic extent and connectivity of old growth. Often lands outside the forest boundary have not been managed for the late-seral or old growth component, so National Forest lands may need to contribute more to the late-seral component to compensate for the loss of this component on other land ownerships within an ecoregion.

Table 3-10 (pages 141, 142, Vol. 1) shows late successional old growth, both currently and following project implementation. This table indicates that 197 acres, 141 acres, 84 acres, and 130 acres would be lost with Alternatives 2, 3, 4, and 5, respectively (i.e., relative to no action). However, Table 2-20 comparing alternative in Chapter 2 (page 91) shows differing effects on old growth acreage for the action alternatives; and the Chapter 3 tables disclosing old growth treatments for the various action alternatives (i.e., Table 3-15, page 172; Table 3-20, pages 178, 179; Table 3-25, page 184; Table 3-30, page 189); and Table 3-44 (pages 259, 260) in the Wildlife Section of the DEIS shows additional differing old growth impacts for the various action alternatives (i.e., different from Table 3-10 and Table 2-20). It would be helpful if the information on old growth effects in these various tables could be presented in a more coherent and consistent manner (i.e., consistency between Table 2-20, Table 3-10, Tables 3-15, 3-20, 3-25, and 3-30, and Table 3-44 or clearer explanations for the differences in old growth effects disclosed in these various tables).

Since the DEIS states that old growth habitat is not proposed for treatment with any action alternative (page 276, Vol. 1), it would be helpful to more clearly explain the causes of the various reductions in old growth projected to occur with the action alternatives. We note that the DEIS indicates that Alternative 4 would retain the greatest amount of late successional and potential old growth, followed by Alternatives 3, 5 and 2 (page 259, Vol. 1). Although we recognize that there are many considerations and trade-offs in addition to old growth effects (e.g., Table 3-38, page 213, Vol. 1, shows Alternatives 2 and 5 reduce fuels and fire risk in the WUI by a greater amount than

Alternatives 3 and 4). We generally favor understory thinning from below, slashing and prescribed fire to address fuels build-up with reduced ecological impacts. We also favor retention of the larger more vigorous trees during timber harvests, particularly trees of desirable tree species whose overall composition may be in decline (e.g., ponderosa pine, western larch).

We do not oppose treatments in old growth stands that protect old growth characteristics (e.g., wildlife habitat values), such as thinning of understory or under burning to reduce fuel loads and ladder fuels in old growth. Such treatments may lessen the threat of stand removal by a wildfire and reduce competition with other vegetation to promote healthier, large old trees, and long-term protection and sustainability of old growth stands.

Wildlife/Threatened & Endangered Species

33. Table 3-24 identifies sensitive wildlife species on the FNF, although the narrative states that a many of these sensitive species are not present or do not have suitable habitat in the project area (page 250, Vol. 1). It appears that the flammulated owl, black-backed woodpecker, fisher, wolverine, gray wolf, and boreal (western) toad are the sensitive species that may reside or have habitat within the project area, and that the black-backed woodpecker, flammulated owl, canada lynx, and fisher are federally-listed or sensitive species associated with old growth (page 253, Vol. 1).

We are pleased that the DEIS indicates that the proposed project will have no or low effects to these sensitive species, with timber harvest and road building activities proposed with Alternative 2 having the greatest effect on these sensitive wildlife species and their habitat, while Alternatives 3 and 4 have the least effect.

34. We are pleased that retention of snags for wildlife are among the design criteria identified in Table 2-17 to provide adequate habitat for cavity nesting species such as the black-backed woodpecker (e.g., all standing dead cull western larch, ponderosa pine and Douglas-fir trees 16 inches d.b.h. or greater would be retained within treatment units with a few exceptions; a minimum 2 (dry habitat types) to 6 (moist habitat types) snags per acre >12" d.b.h. of larch, ponderosa pine, Douglas-fir, other species in order of preference; selecting larger snags over smaller and favoring snags showing signs of wildlife use; etc.). The DEIS indicates that effects of the proposed project on the black-backed woodpecker would be negligible and are unlikely to cause a decline in population viability or lead to federal listing of this species or its habitat (page 322, Vol. 1).

35. We are also pleased that if an active Goshawk nest is located in or adjacent to a treatment unit, logging and related activities in the immediate vicinity would be subject to timing restrictions delaying adjacent activities until July 15 (Table 2-17), making it unlikely that management activities would disturb a nesting pair of birds and cause them to abandon their nest site.

36. The DEIS indicates that two Threatened & Endangered (T&E) Species, the grizzly bear and Canada lynx, may occur within the influence area of the project (page 249, Vol. 1). Effects on the threatened Canada lynx are evaluated in regard to compliance with the Northern Rockies Lynx Management

Direction (NRLMD) (Table 3-86, pages 360-364, Vol. 1), and the DEIS reports project compliance with the NRLMD. It also states that a biological assessment on the preferred alternative will be sent to the U.S. Fish & Wildlife Service (USFWS) to ensure that the scope and location of proposed treatments will maintain adequate habitat connectivity within the bounds of the incidental take statement for the tier-one analysis, and that the Wild Cramer Project is compatible with the recovery of the Canada lynx; and that the USFWS will make a determination about effects of the proposed project on Canada lynx before the project decision is made.

In regard to effects on the threatened grizzly bear the DEIS states that habitat security would be reduced to the greatest degree by alternative 2 and to the least degree by alternative 3. Alternative 2 would involve use of 115 miles of existing closed road and construction or reconstruction of about 27 miles. Alternative 3 would involve use of 61 miles of currently closed road and construction or reconstruction of about 13 miles of road. Alternatives 4 and 5 would be in between alternatives 2 and 3 (Table 3-57, page 337, Vol. 1). It also states that a Biological Assessment for the grizzly bear will be prepared for the preferred alternative before a decision is made (page 341, Vol. 1).

We are pleased that Biological Assessments will be prepared for T&E species for the preferred alternatives and submitted to the USFWS before a decision is made. We note that if it is found that the finally selected project alternative may adversely affect any T&E the final EIS should include the associated USFWS Biological Opinion or formal concurrence for the following reasons:

(a) NEPA requires public involvement and full disclosure of all issues upon which a decision is to be made;

(b) The CEQ Regulations for Implementing the Procedural Provisions of NEPA strongly encourage the integration of NEPA requirements with other environmental review and consultation requirements so that all such procedures run concurrently rather than consecutively (40 CFR 1500.2(c) and 1502.25); and

(c) The Endangered Species Act (ESA) consultation process can result in the identification of reasonable and prudent alternatives to preclude jeopardy, and mandated reasonable and prudent measures to reduce incidental take. These can affect project implementation.

Since the Biological Assessments and EIS must evaluate the potential impacts on listed species, they can jointly assist in analyzing the effectiveness of alternatives and mitigation measures. The EPA recommends that the final EIS and Record of Decision not be completed prior to the completion of ESA consultation. If the consultation process is treated as a separate process, the Agencies risk USFWS identification of additional significant impacts, new mitigation measures, or changes to the preferred alternative.

37. Biodiversity may be an important consideration for new projects or when special habitats (i.e., wetlands, threatened and endangered species habitat) will be affected. The state of the art for this issue is changing rapidly. We recommend that potential project impacts on biodiversity be at least

briefly evaluated and discussed in the NEPA document. CEQ prepared guidance entitled, "Incorporating Biodiversity Considerations into Environmental Impact Analysis Under the National Environmental Policy Act," http://ceq.hss.doe.gov/publications/incorporating_biodiversity.html.

U.S. Environmental Protection Agency Rating System for Draft Environmental Impact Statements

Definitions and Follow-Up Action*

Environmental Impact of the Action

LO - - Lack of Objections: The Environmental Protection Agency (EPA) review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

EC - - Environmental Concerns: The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce these impacts.

EO - - Environmental Objections: The EPA review has identified significant environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU - - Environmentally Unsatisfactory: The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health or welfare or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1 - - Adequate: EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis of data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2 - - Insufficient Information: The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses or discussion should be included in the final EIS.

Category 3 - - Inadequate: EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the National Environmental Policy Act and or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

* From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment. February, 1987.